

North Carolina Highway Bulletin

VOL. III

SEPTEMBER-OCTOBER, 1922

NO. 7-8



BUCK CREEK BRIDGE—McDOWELL COUNTY—PROJECT NO. 845



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NORTH CAROLINA HIGHWAY BULLETIN



Vol. III, No. 7-8

H. K. WITHERSPOON, Editor

SEPTEMBER-OCTOBER 1922

Williamston Celebrates Opening of New Bridge

SEPTEMBER 7th was a red-letter day in the old town of Williamston and one which will long be remembered in the minds of those present at the celebration of the formal opening of Federal Aid Project 86, better known, perhaps, as the "Williamston Bridge." This staid old town on the banks of the Roanoke never before witnessed such a gathering of people in its bounds, but be it said to the credit of those who had events in charge, particularly the ladies, they were equal to the occasion in every respect, and the day's program passed off without a hitch. No one will dispute the fact that there was sufficient cause for the jubilant celebration that took place for Williamston and Windsor were connected for the first time in history.

The Roanoke River, while not one of the chief streams of the State, has certain peculiarities all its own. With the exception of a few places the river is flanked on either side by almost impenetrable swamps, which at flood periods are covered by water. Then, too, the river has a number of sharp turns, wandering down between Martin and Bertie counties as if undecided which way to go. Williamston is situated on a bluff on the outer rim of one of these hairpin turns while on the opposite side of the river is one of the previously mentioned morasses. Further up on the hairpin turn the river once took a short cut and brought into being a short stream known as Conine Creek thus forming an island between Williamston and the mainland of Bertie County. Project 86 is made up of two sections, A and B; the former being a causeway through Conine Swamp and B a steel and concrete drawbridge and a concrete bridge over Conine Creek, forming in this way a connection from Williamston to high ground in Bertie County.

In retrospection it would not be amiss to review briefly the events that led up to the realization of a long dreamed-of bridge across the Roanoke. For years past, the people of Martin and Bertie counties have had to depend on more or less uncertain steamboat and railroad service, and decidedly uncertain roads. Certain influential citizens on either side of the river made a thorough investigation of conditions and decided that something must be done to better conditions. For various reasons, chiefly financial, nothing was done until

1919, when with the passage of the 1919 road law, the availability of Federal Aid funds and generally prosperous conditions the outlook was more promising and definite steps were taken toward the construction of the bridge. As is always the case in an undertaking of this kind, there was a certain amount of local opposition that had to be overcome before further steps could be taken. At the same time permission had to be secured from the War Department at Washington, to build a bridge across the river, inasmuch as it was used for navigation. With the completion of these details negotiations were taken up with the State Highway Commission, closed, and plans begun for the structure and approaches. Upon completion of plans, which were designed and drawn up in their entirety in the drafting department of the Commission, the project was advertised for bids. No satisfactory bids were received for the construction of section "A," which consists of approximately three miles of earth fill through Conine Swamp, so prisoners were secured from the State prison farm and with equipment owned by the State construction was begun in February 1920. All of the dirt for the embankment was hauled from high ground in Bertie County, at the northern end of the project, through the swamp in dinkie trains. For two years this work of making the fill trainload by trainload, was carried on until at last the job was finished. According to monthly estimates a total of 589 actual working days were consumed in placing the 243,000 cubic yards of earth in the fill.

The contract for the construction of section "B" of the project was executed in March, 1921 with the Boyle-Robertson Construction Co., and construction was begun on March 19th. A description of the bridge has been published in a previous issue of the *Bulletin* but is reprinted herewith:

There are two separate structures, namely, the swing or draw span over the Roanoke River and the span over Conine Creek, together with the approaches at either end of these main structures. Beginning at the city limits of Williamston there is an approach viaduct consisting of nine 20-foot reinforced concrete deck girder

(Continued on page 10)

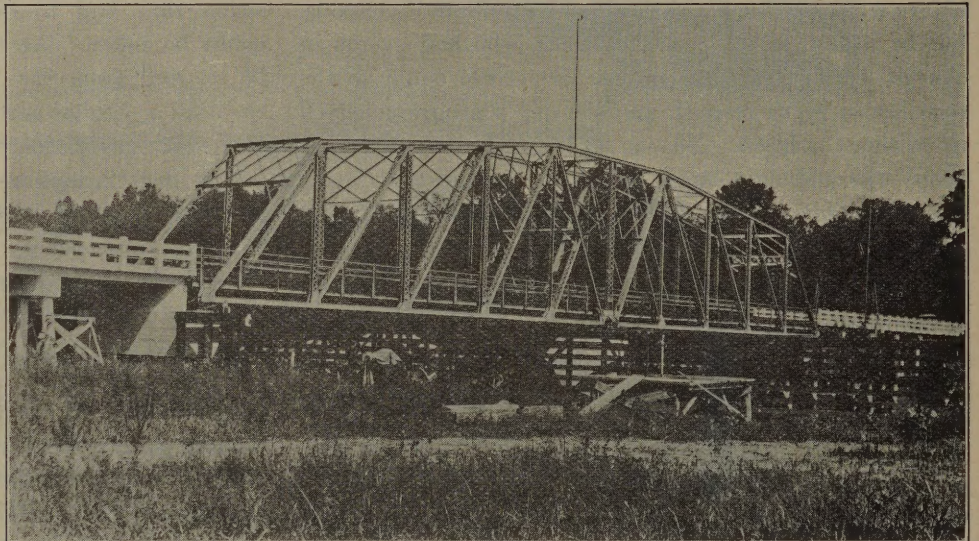


SOME OF THE COMMISSIONERS
WERE PRESENT

LEFT TO RIGHT:

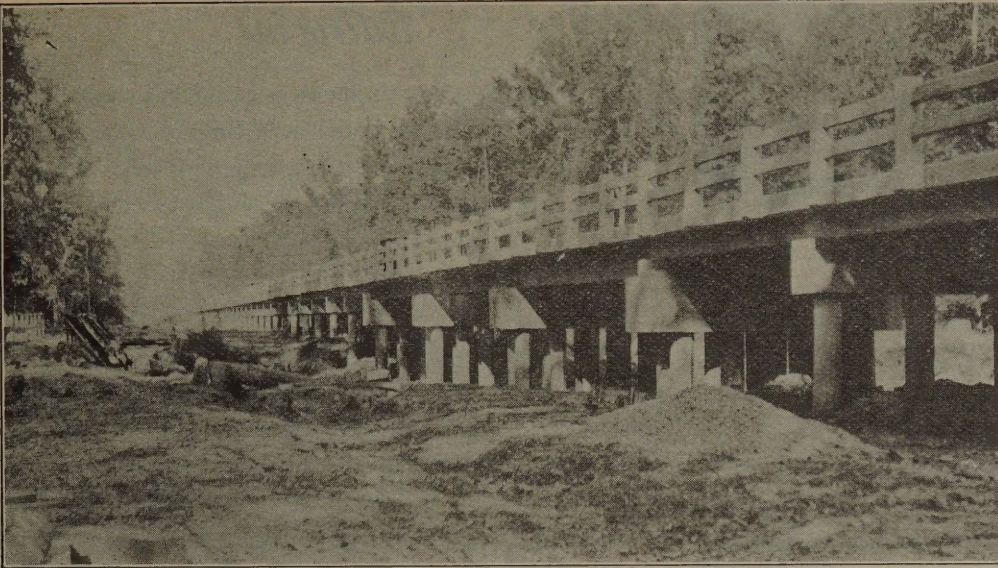
W. C. WILKINSON, CHARLOTTE;
J. ELWOOD COX, HIGH POINT;
FRANK PAGE, CHAIRMAN, RA-
LEIGH; R. A. DOUGHTON, SPAR-
TA; J. G. STIKELEATHER,
ASHEVILLE

THE DRAW-SPAN

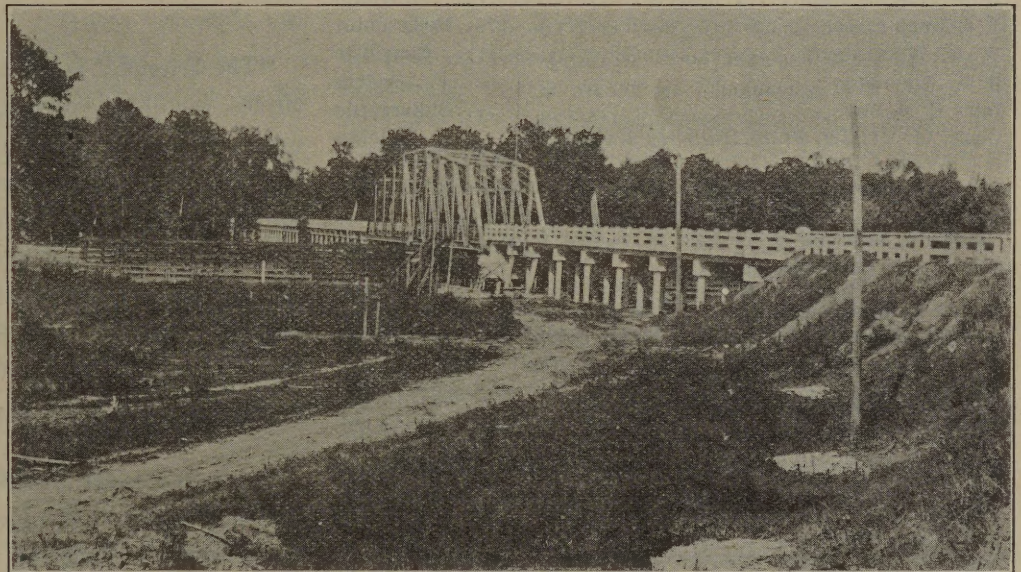


THE MEN WHO BUILT THE
BRIDGE

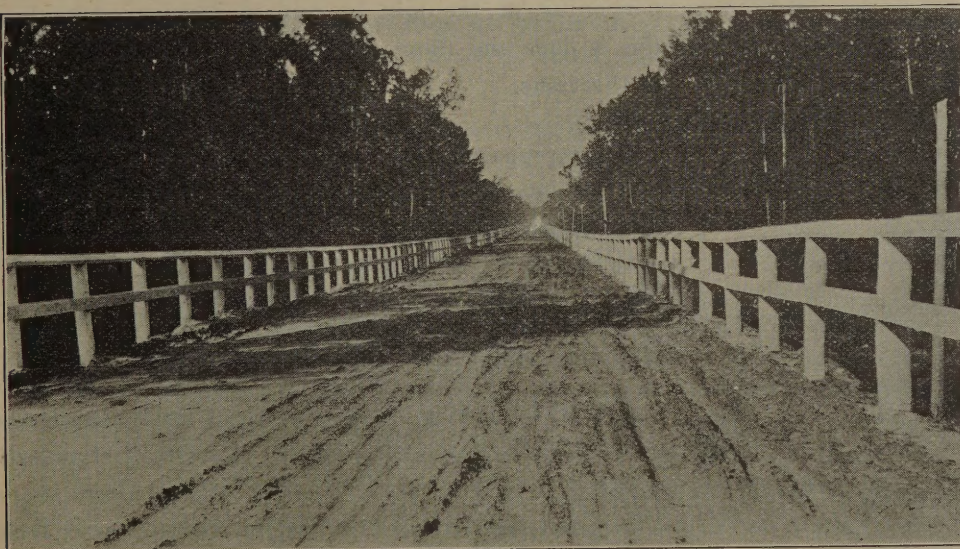
A. K. HAXSTUN, RESIDENT EN-
GINEER; MR. BROWN, CONTRAC-
TOR'S SUPERINTENDENT



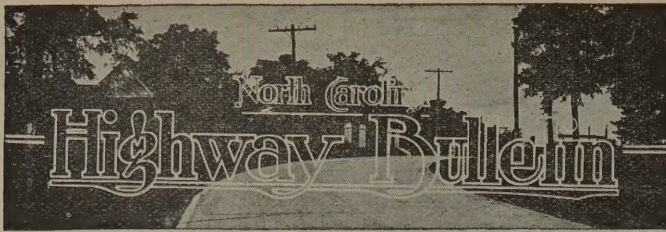
THE VIADUCT APPROACH



GENERAL VIEW OF BRIDGE



LOOKING THROUGH CONINE
SWAMP ON CAUSEWAY



PUBLISHED MONTHLY BY
NORTH CAROLINA STATE HIGHWAY COMMISSION
RALEIGH, NORTH CAROLINA

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Address all communications in regard to BULLETIN to the Editor, Box 1140, Raleigh, N. C.

This BULLETIN will be sent gratis to any State or county official, contractor, newspaper, trade publication, library, or other person interested in the improvement of roads and in the work of the Commission. Advertising rates may be obtained on application.

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Editorial

Our cover this month shows a handsome arch bridge that has just been completed over Buck Creek, McDowell County. Bridges of this permanent type are fast replacing the wooden structures which have heretofore existed on the State highways.

Several projects of note have been completed since the State Highway Commission began to operate but none of more importance than Federal Aid Projects 86-A and -B, known as the "Williamston Bridge." In addition to performing the miracle of shortening the distance between Williamston and Windsor from 140 to 14 miles it makes North Carolina larger by about 8 counties; counties which have heretofore been cut off from North Carolina and forced to trade in Virginia cities.

"The Detour," is the title of a paper which, in trade circles, would be called the "house organ" of the Highway Commission. While it is written in a lighter vein than the **Bulletin**, it carries items of interest to those connected with the Commission, and plays a valuable part in keeping the "esprit de corps" that exists in the organization. Just who the editor is no one has found out; the editor of the **Bulletin** has been accused but here denies the honor. Whoever the editor may be, he deserves credit for the publication.

Down in Pender County the State Highway Commission is building a road which is rather unusual in its construction in that the usual stone aggregate used in the construction of a bituminous road is omitted and local sand used. This of course necessitates the proportioning of the mix to suit conditions. Just how this is done and the result obtained is found elsewhere in this issue.

Great preparations are under way for the Thirteenth American Good Roads Congress and Fourteenth National Good Roads Show, which will be held in Chicago, January 15, 16, 17, 18 and 19, 1923. State Highway Commissioner Frank Page and Chief Engineer Chas. M. Upham are both on the program for talks.

Col. H. L. Bowlby, of the Bureau of Public Roads has written a very interesting history of roads, dealing with highway construction in ancient and modern times. This story is reprinted elsewhere in this issue from "Colorado Highways."

Contracts Awarded August 30th 1922

THE North Carolina State Highway Commission established what is believed to be a new record in highway letting and on August 30th bids were opened for over 200 miles of road work and four bridges, a total of bids received being \$4,302,185.00. The bids received were as follows:

First District

Project 106, Bertie County, consisting of 7.12 miles of road between Williamston and Windsor was awarded to J. F. Mulligan Construction Company, of North Wilkesboro, for surfacing and the structures were awarded to Boney and Hostetler of Williamston. This road will be surfaced with top-soil and including structures will cost \$58,204.00.

Project 184, Pitt County, consisting of 7.14 miles of roadway on route 11 between Ayden and Grifton, was awarded to the Public Service Production Corporation of Newark, N. J., approximate cost being \$206,516.00 for the grading, structures and plain concrete surfacing.

Project 157-A, Martin County, was awarded to Jami-son Bros., of High Point, for the grading and surfacing, and the structures to J. A. Marrow, of Clarksville, Va. This project consists of 12.41 miles of road between Williamston and Hamilton on route 25 and will cost approximately \$85,813.00 for the grading, drainage and top-soil surfacing.

Project 157-B, Martin County, was awarded to J. F. Mulligan Construction Company, of North Wilkesboro, for grading and surfacing with top-soil and the Batson Cook Co., of West Point, Ga., was awarded structures on this project, total cost estimated to be \$90,396.00.

Third District

Atlantic Bridge Company, of Roanoke, Va., was awarded Project 317, which consists of a bridge over Tanners Creek on route 201, estimated cost of construction being \$18,892.00.

L. L. Tindall, of Waterford, Wis., was awarded Project 328, Columbus County, consisting of 7.03 miles of plain concrete roadway between Whiteville and Chad-bourn, on route 21.

Project 351, New Hanover County, consisting of 10.64 miles of asphaltic concrete roadway between Wilmington and Castle Hayne, on route 40 was awarded to the Southern Willite Paving Company, of Richmond, Va., approximate cost of construction being \$200,000.00.

Project 380, Pender County, was awarded to C. W. Lacy, of Wilmington, N. C. This project consists of the construction of 8.98 miles of waterbound macadam road between Wilmington and Clinton and will cost in round figures \$162,213.00.

Fourth District

Project 412, Durham County, consisting of 8.8 miles of plain concrete roadway from the Person County line

toward Durham on route 13, was awarded to L. L. Tindall, of Waterford, Wis., cost of construction being approximately \$252,582.00.

R. M. Hudson, of Salisbury, was successful bidder on Project 460, Orange County, consisting of 9.87 miles of asphaltic concrete roadway from Hillsboro to the Alamance County line on route 10. This project only includes the hard-surface on Project 456 and will cost in round figures \$297,000.00.

Fifth District

Project 528, Davidson County, consisting of 10.24 miles of plain concrete roadway from Thomasville to Lexington, was awarded to Hagerdorn Construction Company, of Thomasville, for roadway and the structures to J. A. Peterson, of Montgomery, Ala., the total cost of construction being approximately \$427,500.00.

Project 589, Rockingham County, consisting of 9.81 miles of plain concrete roadway between Wentworth and Leaksville, was awarded to Cheatwood & Driscoll, of Richmond, Va., approximate cost being \$325,000.00.

Project 590, Rockingham County, was awarded to Geo. R. Martin, of Salisbury, which consists of 2.1 miles of road from Madison to Stoneville and will cost \$62,092.00.

Sixth District

Project 608, Anson County, was awarded to Lampton-Burks, of Cornelius, N. C., for the grading and surfacing and the structures were awarded to J. A. Peterson, of Montgomery, Ala. This project consists of 7.88 miles of asphaltic concrete roadway between Polkton and Wadesboro and will cost \$345,410.00.

Project 615, Cabarrus County, consisting of 4.9 miles of asphaltic concrete roadway between Kannapolis and Glass, was awarded to the Thompson-Caldwell Construction Company, Mooresville, the cost of construction being \$98,741.00.

Project 658, Mecklenburg County, was awarded to the Union Paving Company, of Philadelphia, Pa. This project consists of 9.55 miles of asphaltic concrete road between Charlotte and the Cabarrus County line, on route 15, and will cost approximately \$270,705.00.

One of the most important projects awarded at this letting was Project 673, which consists of a reinforced concrete bridge across the Yadkin River between Lexington and Salisbury. This bridge when completed will replace the toll bridge which has been used for several years. The contract for this bridge was awarded to the Hardaway Contracting Company, of Columbus, Ga., while the contract for grading the approaches was awarded to Elliott & Sons, of Spartanburg, S. C. This bridge will be a handsome structure of reinforced concrete and will cost approximately \$285,565.00.

Seventh District

Project 712, Ashe County, consists of 11.06 miles of gravel road between Jefferson County and the Alleghany County line, was awarded to J. T. Plott, of Greensboro, at an approximate cost of \$197,687.00.

Project 761, Surry County, consisting of 2.2 miles of road between Mount Airy and Granite Quarry, was awarded to G. R. Martin of Salisbury. The road will be surfaced with plain concrete and will cost approximately \$77,334.00.

Project 765, Surry County, was awarded to the Campbell Contracting Company, of Columbus, Ga. This project consists of 3.4 miles of plain concrete road from the Yadkin County line through Elkin to the intersection of the Dobson road. The total cost of construction of this work is estimated to be \$112,685.00.

The grading and surfacing of Project 784, Wilkes County, was awarded to the J. F. Mulligan Construction Co., of North Wilkesboro, while the contract was awarded to the Foster Construction Company, of Wilkesboro, for structures. This work consists of 4.97 miles of road between Moravian Falls and Alexander County line and will cost approximately \$86,000.00.

D. J. Bookshire, of North Wilkesboro, was awarded the contract for the grading, drainage and plain concrete surfacing on Project 785, Wilkes County. This project extends from North Wilkesboro to Fair Plains, a distance of 2.52 miles and will cost \$78,703.00.

Eighth District

Project 821, Cleveland County, was awarded to the Davis-Wilecox Construction Company, of Gastonia.

This project consisting of 1.58 miles of plain concrete roadway between the Gaston County line and Kings Mountain will cost approximately \$60,192.00.

Project 822, Cleveland County, consisting of 10.47 miles of asphaltic concrete roadway from Cleveland Springs to Kings Mountain, on route 20, was awarded to Elliott & Sons, of Spartanburg, S. C., while the structures were awarded to J. A. Kreis, of Knoxville, Tenn., total cost of construction being \$404,378.00.


Project 847, McDowell County, consisting of 3.84 miles of graded road from the Avery County line toward Marion, was awarded to C. W. Lacy, of Wilmington, while the structures were awarded to Oliver & Costello Bros., of Knoxville, Tenn., cost of construction being estimated at \$94,444.00.

Project 848, McDowell County, consisting of a bridge over Mills Creek near Old Fort on route 10, was awarded to R. M. Thurmond, of Lynchburg, Va., cost being estimated to be \$16,906.00.

Project 858, Mitchell County, consists of a bridge over Tar River near Spruce Pine and was also awarded to R. M. Thurmond, of Lynchburg, Va., total cost of construction being \$42,367.00.

Project 876, Rutherford County, consisting of 4.83 miles of roadway between Forest City and Rutherfordton, on route 20, was awarded to Fiske-Carter Construction Company, of Greenville, S. C. The cost of construction is estimated to be \$146,265.00 and type surfacing plain concrete.

Illinois Adopts New Design *for* Concrete Roads

 As a result of the tests made on the Bates Experimental Road, which were recently completed, a new cross-section design for concrete pavements has been made standard by the Illinois State Highway Department. This new cross-section provides for a thickness of 9 in. at the edges of the pavement tapering to 6 in. at a distance of 2 ft. from the edges. The remainder of the pavement is to have a uniform thickness of 6 in. and the amount and arrangement of reinforcement are to be the same as that hitherto used with the exception of the center-joint material. A new design has been provided for the center joint to correspond with the new 6-in. center thickness.

The Bates tests show conclusively that the strength of the edges of any rigid pavement built according to the design hitherto used is much less than the strength of the interior portion of the slab. These tests disclosed the fact that a center thickness of 6 in., or perhaps even 5 in., is ample to support the legal load limit provided by the Illinois laws, and the new cross-section takes advantage of this fact. The tests further indicate that even with a 6-in. thickness for the main portion of the slab, a 7-in. edge with the $\frac{3}{4}$ -in. longitudinal bar would

still not be as strong as the center of the slab. For this reason the thickness of the edges has been increased.

The attention of contractors who expect to bid on Illinois road work is called to the fact that the new cross-section provides 1 sq. ft. less of cross sectional area than a slab having a 7-in. uniform thickness. This means that the new cross-section will require $195\frac{1}{2}$ cu. yd. less of concrete per mile of pavement than the standard 7-in. design heretofore used.

The matter of shaping the subgrade to accommodate the new cross-section has been studied by the department and it has been determined that the extra cost will be very small as subgrading machines may easily be adapted to cut the subgrade to the new form. Even should the subgrade be cut to the usual crown at an elevation 6 in. below the top of the forms and the dirt along the edges thrown out by hand, it may be seen that the additional cost of shaping the subgrade would be but a small item.

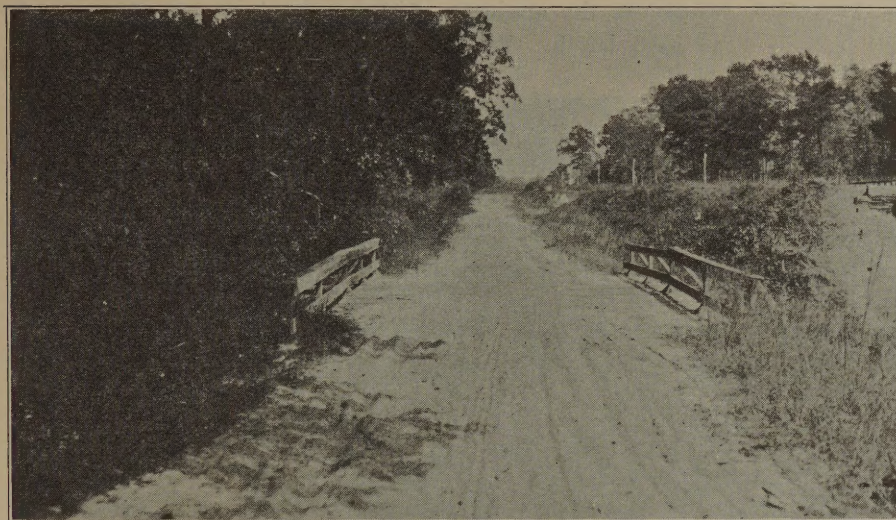
Frank T. Sheets, Superintendent of Highways, and Clifford Older, State Highway Engineer, feel that the new design will meet with favor both from contractors and from all interested in progressive highway development.

Making *the* Most of Circumstances

NATURALLY every section of North Carolina is interested in and anxious for hard-surfaced roads, or, as the common expression goes, "hard roads." Some parts of the State, by reason of the geographical location or by the geological formation peculiar to that locality are better adapted to the economical construc-

tion conditions are ideal. In addition to the accessibility of local sand, which constitutes 90% of the total aggregate, it was possible to erect the asphalt mixing plant on a spur track adjoining the sand supply thus enabling the asphalt and stone dust filler to be shipped at a minimum expense.

Since it has been proven that, under the foregoing conditions, the sand-asphalt pavement is most economical the question resolves itself into one as to the stability or resistance to wear under heavy traffic. While the pavement which has been laid has not as yet been submitted to any severe test it has withstood a considerable volume of passenger-car traffic in addition to the constant pounding of the trucks used in laying the pavement. So far there has been no appreciable wear nor have any signs of failure been noted. Better conclusions, however, may be drawn as to the success of the pavement from the fact that similar types have been



OLD ROAD BEFORE CONSTRUCTION

tion of the above type of highways than are some others. The people down in Pender County, being human, wanted hard-surfaced roads but unfortunately road-building material is as scarce as the proverbial hen's teeth in this section and the expense of shipping in the necessary stone would have rendered the cost of construction prohibitive so some other scheme had to be worked out to secure the type of road that would meet the traffic requirements.

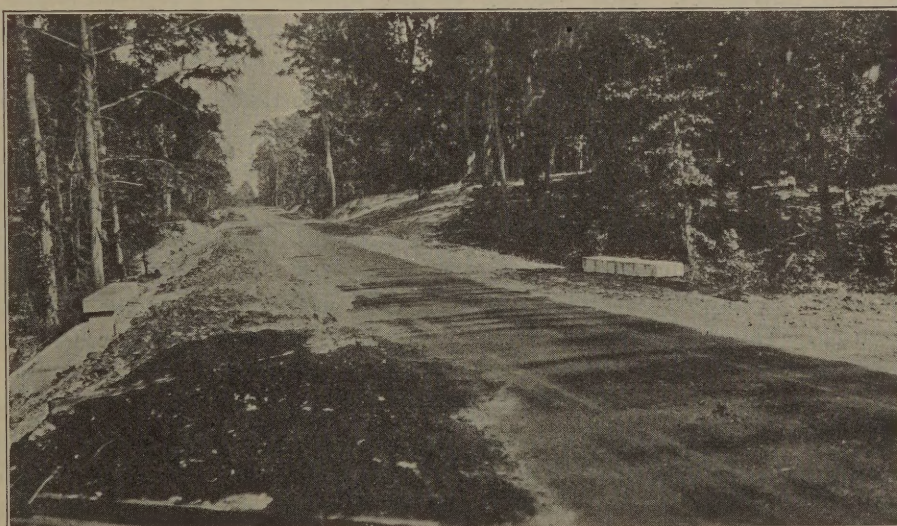
Though this County is lacking in the stone so necessary in the construction of the usual type of hard-surface road there is along the route of the highway an unlimited amount of sand, most of which passes the requirements of the State Highway Commission for mixing with asphaltic cement. This fact narrowed the question of materials down to that of combining this available aggregate with asphaltic cement to form an asphaltic concrete pavement, both base course and wearing surface being of practically the same composition. This method of construction has been followed out in other sections of the country with successful results so that the Pender County work was an experiment only so far as the cost was concerned. Accurate cost data has been kept on the work and sufficient progress has been made to reveal the fact that the cost barely exceeds by half that of other standard pavements. This is due

largely, however, to the fact that material and construction conditions are ideal. In addition to the accessibility of local sand, which constitutes 90% of the total aggregate, it was possible to erect the asphalt mixing plant on a spur track adjoining the sand supply thus enabling the asphalt and stone dust filler to be shipped at a minimum expense.

Since it has been proven that, under the foregoing conditions, the sand-asphalt pavement is most economical the question resolves itself into one as to the stability or resistance to wear under heavy traffic. While the pavement which has been laid has not as yet been submitted to any severe test it has withstood a considerable volume of passenger-car traffic in addition to the constant pounding of the trucks used in laying the pavement. So far there has been no appreciable wear nor have any signs of failure been noted. Better conclusions, however, may be drawn as to the success of the pavement from the fact that similar types have been

built in other sections of the country and have proven successful in carrying as heavy traffic as is anticipated on this highway in years to come. The actual value of this pavement can hardly be estimated for if it proves to be a success, as there is every reason to expect, almost twice the mileage can be built, under similar conditions, with the same amount of available funds as compared with the standard type of hard-surface pavement and in addition counties where like conditions exist will be enabled to build hard-surfaced roads which would be otherwise impossible.

The construction of this road is very simple. The road is graded and drained in the usual manner, and



VIEW OF COMPLETED SAND ASPHALT ROAD

thoroughly compacted either by a steam roller, or if too sandy for a steam roller to operate, a horse-drawn two embankment roller is utilized. The subgrade is then improved by the best soil possible, or if there happens to be no soil to improve the subgrade, then the sand-asphalt road is laid directly upon the sand. Wooden construction forms are set up, on each side of the pavement, and firmly staked to the ground. The forms are 2" x 8" and are left in place after the pavement is completed.

The plant for mixing the sand-asphalt consists of a rotary sand dryer, capable of heating approximately one hundred cubic yards of sand per day. The heating is done by fuel oil, which seems to be the economic fuel at this particular time and in this locality. The sand dryer is so located that the dry sand is discharged near the elevator of the asphalt plant which carries the sand to the storage bins, located near the asphalt pug mill. The scales properly located under the storage bins assure the operator of the proper amount of sand for each batch. To this is added the proper amount of



SPREADING THE SAND ASPHALT

After the subgrade is prepared and the forms set, the sand-asphalt base mixture, comprising approximately 93% local sand and 7% asphalt, is then laid to a depth of $3\frac{1}{2}$ inches, after compacting with an eight-ton tandem roller. Care is taken in the selection of the sand pit that the best asphalt sand available is used. After approximately three hundred or four hundred feet of base is constructed, a wearing surface of $1\frac{1}{2}$ inches after compaction is added to the base. This is thoroughly rolled in a manner similar to that of rolling sheet-asphalt pavements. This wearing surface approaches the character of sheet-asphalt surface, and the sand ingredient is graded, and this gradation, if necessary, is corrected by the addition of dust filler similar to that used in sheet-asphalt paving. The surface course contains about 9 to 9.5% asphalt binder. Although the densities of the base course rarely exceed 2.00, the surface course often exceeds 2.15 and sometimes 2.20. This is acquired by the addition of dust filler and the careful regulations of temperatures, and complete rolling. Thus, there is constructed a sheet-asphalt pavement supported on a sand asphalt binder course on a sand subgrade confined by two hide forms. Experiments in Delaware, now ten years old, show that this method of construction, if built on good foundations, will carry medium heavy traffic with a small cost of maintenance.

asphalt binder, which has been weighed on suitable and convenient scales.

When the top surface is being run the proper amount of dust filler is added to the sand and asphalt. After the sand and asphalt has been thoroughly mixed in the pug mill it is loaded on trucks and carried to the road.

The asphalt binder is generally shipped in tank cars, although in some instances the road may be so located that it is more practical to ship it in barrels. If, however, the sand for the surface can be secured near a railroad siding it is much cheaper to have the asphalt binder shipped in tank cars. When the asphalt binder is shipped in tank cars a coil and return pipe, surrounding a steam pipe line with a return from the discharge to the tank car may be used, and thus do away, on account of the heating coils within the car, with the storage kettles. If the asphalt binder is shipped in barrels it is quite necessary to use storage kettles, in which case, three five hundred-gallon kettles are used.

At the present time there are about ten miles of this type of road under construction on route No. 30 between Wilmington and Jacksonville, beginning at Scotts Hill and extending along the above route in a northerly direction towards Jacksonville. It is planned to continue this construction for a distance of about forty miles on this route unless something unforeseen arises to prevent.

STATUS OF FEDERAL AID WORK IN NORTH CAROLINA

Projects Under Construction

"H S" denotes any type of hard surfaced road.

"G" denotes any type of gravel, sand-clay, or topsoil road.

NO	COUNTY	LENGTH	TYPE	APPROXIMATE COST	BEGUN	CONTRACTOR
15	Guilford.....	4.205	H S	\$ 5,441.75	9-1-17	County Commissioners.
17	Wilkes.....	17.6	G	101,386.08	10-15-18	County Commissioners.
61	New Hanover.....	2.186	G	234,841.39	7-12-20	C. W. Lacy
69	Transylvania.....	9.348	G	231,409.04	3-25-20	Allport & Alexander Construction Co.
75	Columbus.....	7.06	G	66,605.38	12-9-20	County Commissioners.
94A	Mitchell.....	5.04	H S	190,375.13	6-22-20	Gibson Construction Co.
125A	Alleghany.....	4.99	G	153,899.13	11-22-21	W. E. Graham
127	Wilson.....	7.63	G	33,780.45	3-5-21	County Commissioners—Lee J. Smith.

Projects Completed

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	COMPLETED	CONTRACTOR
1*	Mecklenburg.....		Bridge	\$ 59,224.90	9-5-18	C. W. Requarth & Co.
2*	Henderson.....	7.75	G	33,141.74	12-17-19	State Convict Labor
3*	McDowell.....	2.85	G	24,405.73	12-17-19	County Commissioners
4	Craven.....	9.46	G	21,089.23	10-12-19	County Commissioners
5*	Burke.....	8.03	G	19,888.05	11-1-19	County Commissioners
8*	Cumberland.....	13.46	G	62,800.71	6-20-21	County Commissioners.
9*	Polk.....	12.78	G	68,175.45	4-15-21	County Commissioners.
11*	Lenoir.....	1.78	H S	56,893.18	1-25-21	West Construction Co.
12*	Wayne.....	8.62	G	26,727.98	11-2-20	County Commissioners.
13*	Wayne.....	12.573	G	101,467.23	12-1-21	County Commissioners.
14*	Halifax.....	8.01	G	19,017.83	8-20-20	State Convict Labor.
16	Haywood.....	14.27	G	64,705.05	9-22-22	County Commissioners.
18*	Alexander.....	9.8	G	66,446.49	3-31-21	County Commissioners.
19*	Rockingham.....	8.21	G	32,759.36	11-11-19	County Commissioners.
20*	Yadkin.....	6.41	G	25,146.45	7-26-20	County Commissioners.
21*	Person.....	7.675	G	25,911.04	3-15-20	County Commissioners.
22A*	Alamance.....	1.196	H S	30,103.48	6-27-19	County Commissioners.
22B*	Alamance.....	8.3	H S	290,179.36	8-19-21	Powell Paving and Construction Co.
23*	Burke.....	7.68	G	42,873.90	11-1-20	Lovelady Township Forces.
24*	Wake.....	4.24	H S	127,840.21	11-30-19	W. W. Boxley & Co.
25*	Person.....	8.175	G	101,537.51	10-20-20	County Commissioners.
26*	Davidson.....	8.41	G	14,115.96	10-1-19	County Commissioners.
27A*	Orange.....	8.235	G	53,945.73	4-23-21	W. S. & L. A. Crawford.
29*	Union.....	8.655	G	58,949.25	4-8-21	County Commissioner—J. S. Stearns.
30*	Mecklenburg.....	6.304	H S	102,551.35	3-31-21	County Commissioners.
31*	Buncombe.....	3.1	H S	70,147.88	10-24-19	County Commissioners.
33	Montgomery.....	3.72	G	15,246.71	7-8-21	County Commissioners.
34	Wayne.....		Bridge	50,798.00	10-8-21	Roanoke Bridge and Iron Works, Inc.
35*	Forsyth.....	1.87	H S	59,867.61	2-25-20	County Commissioners.
36*	Durham.....	3.46	H S	115,075.57	12-15-19	R. G. Lassiter & Co.
37*	Gaston.....	10.30	H S	167,173.23	12-28-21	County Commissioners.
38*	Rockingham.....	10.92	G	46,809.92	9-17-20	County Commissioners.
38A	Caswell.....	6.67	G	50,907.23	7-6-21	Bolton Construction Co.
39*	Union.....	10.61	G	74,337.71	4-9-21	County Commissioners—J. S. Stearns.
40*	Union.....	4.287	G	18,434.20	12-11-20	County Commissioners.
41	Watauga.....	8.95	G	94,681.29	11-10-21	County Commissioners.
42*	Stanly.....	11.67	G	80,922.15	9-10-20	Gibson Construction Co.
43*	Beaufort.....	2.2	H S	95,089.12	5-11-20	Simmons Construction Co.
44*	Granville.....	4.57	G	51,377.43	4-20-21	T. W. Chandler—P. R. Ashby.
45*	Buncombe.....	7.852	H S	359,777.28	7-23-21	H. A. Wells—Asheville Construction Co.—Asheville Paving Co.
47*	Guilford.....	4.607	H S	162,689.83	4-8-21	County Commissioners.
48A*	Northampton.....	5.804	G	60,620.51	10-30-20	Virginia Contracting Co.
48B	Northampton.....	2.69	G	44,749.65	10-4-20	Porter & Peck—A. C. House.
49*	Lenoir.....	6.017	H S	199,872.19	6-1-21	T. H. Gill & Co.—West Construction Co.
50*	Guilford.....	2.65	H S	101,596.44	12-31-20	County Commissioners.
51*	Guilford.....	2.26	H S	87,603.12	9-27-20	County Commissioners
52*	Cabarrus.....	8.986	G	162,399.61	3-22-21	Gibson Construction Co.—J. E. Lane.
53*	Lenoir.....	7.234	H S	246,838.20	2-10-21	T. H. Gill & Co.—West Construction Co.
54*	Wake.....	6.811	H S	239,736.26	8-23-20	R. G. Lassiter & Co.
55A*	Mecklenburg.....	6.008	H S	196,899.73	12-28-20	Simmons Construction Co., Inc.
55B*	Mecklenburg.....	4.59	H S	188,445.18	8-13-21	Simmons Construction Co., Inc.
56*	Forsyth.....	5.868	G	47,709.31	10-29-20	C. B. Hester—Luten Bridge Co.
57	Rowan.....	6.75	G	72,549.27	4-22-21	W. E. Graham—R. M. Hudson Co.
58	Johnston.....	6.018	G	69,453.50	5-20-20	P. R. Ashby.
59	Columbus.....	11.025	G	106,872.26	1-26-22	County Commissioners.
60	Lenoir.....	7.88	H S	259,445.25	3-31-22	T. H. Gill & Co.—West Construction Co.
62	Buncombe.....	3.43	H S	139,191.32	1-27-22	H. C. McCrary, Inc.—Asheville Construction Co.
63*	Buncombe.....	3.76	H S	167,933.55	9-20-21	Allport & Alexander Construction Co.—H. C. McCrary, Inc.—Asheville Paving Co.
65	Pitt.....	9.57	G	99,191.06	10-20-21	Porter & Peck.

STATUS OF FEDERAL AID WORK IN NORTH CAROLINA---Continued.

Projects Completed (Continued.)

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	COMPLETED	CONTRACTOR
66	Haywood.....	6.18	G	\$ 105,296.45	4-4-22	O'Biern Construction Co.
67*	Nash.....	8.81	H S	384,126.08	4-20-21	R. G. Lassiter & Co.
68	Sampson-Harnett..	27.4	G	305,225.54	6-24-22	P. R. Ashby—F. L. Grant, Inc.
70A	Jackson.....	4.83	G	150,081.11	8-18-20	Wright & Nave.
71	Durham.....	6.69	H S	319,153.39	10-26-21	State Forces.
72*	Anson.....	3.896	G	70,470.89	3-4-21	Gibson Construction Co.—J. A. Kreis & Co.
73*	Nash.....	8.73	G	159,913.16	4-10-22	Porter & Boyd.
74A*	Stanly.....	2.803	G	25,537.45	8-20-20	County Commissioners.
74B	Stanly.....	4.92	G	63,411.26	5- -21	County Commissioners.
76*	Cabarrus.....	1.35	H S	54,583.76	10-29-20	R. M. Hudson & Co.
77*	Rutherford.....	2.206	H S	100,159.44	9-5-21	E. T. Belote.
78A*	Rutherford.....	9.64	G	88,230.71	8-3-21	Ross Brothers.
78B*	Rutherford.....	10.26	G	71,056.48	8-3-21	Ralph E. Oliver.
79*	Cleveland.....	1.645	H S	67,063.64	10-30-20	Noll Construction Co.
80A*	Montgomery.....	16.6	G	226,516.20	6-20-21	County Commissioners.
80B*	Montgomery.....	11.07	G	65,145.02	10-25-21	Lee J. Smith Const. Co.—P. R. Ashby.
81	Pender.....	26.11	G	273,439.45	12- -21	Porter & Boyd.
82	Davidson.....	4.54	G	59,983.71	12-18-20	Heilig & Sherrill.
84A	Burke-McDowell..	8.33	G	128,193.76	8-3-21	J. A. Kreis & Co.
84B*	McDowell.....	6.76	G	109,659.49	8-1-21	J. A. Kreis & Co.
85*	Davie.....	8.28	G	58,756.89	9-26-20	W. E. Graham.
86A	Martin-Bertie....	3.09	G	98,454.67	2-25-20	State Forces.
86B	Martin-Bertie....		Bridges	332,308.83	3-19-21	Boyle-Robertson Construction Co.
90*	Pamlico.....	12.03	G	127,981.78	9-16-21	Eagle Engineering Co.
91*	Surry.....	10.68	G	113,805.84	6-27-21	W. E. Graham—R. W. Curtis & Co.
92*	Surry.....	10.38	G	133,141.03	6-20-21	W. E. Graham—R. W. Curtis & Co.
93	Franklin-Warren..	19.8	G	192,993.57	9-25-20	Chandler & Ragland—Stearns Bros.
96	Yancey.....	2.95	G	82,653.12	1-10-22	Gibson Construction Co.
98A	Moore.....	20.53	G	259,240.38	5-31-22	J. T. Plott—J. E. Lane & Co.
98B	Moore.....	8.75	G	41,055.46	3-8-22	Lee J. Smith Construction Co.
98C	Lee.....	4.53	G	18,240.64	10-29-21	Gibson Construction Co.
99A	Chatham.....	12.65	G	126,717.70	8-11-21	T. W. Chandler and State Forces.
99B	Chatham.....	21.82	G	259,931.59	11-19-20	J.T. Plott—Atlantic Bridge Co.
100	Avery.....	14.00	H S	272,089.78	3-20-22	Southern Dray Co.
101A*	Randolph.....	10.14	G	123,893.99	8-12-21	S. L. Davis—J. A. Kreis & Co.
101B	Randolph.....	9.64	G	107,928.75	3-6-22	J. T. Plott—Hanford Bros.
103*	Duplin.....	11.32	G	111,931.05	10-20-21	County Commissioners.
105*	Hoke.....	9.8	G	95,501.80	10-25-21	Jameson Brothers—George, Hankins & George.
107	Madison.....	2.46	G	70,901.40	10-11-21	Southern Dray Co.
109*	Burke.....	3.58	G	55,191.64	5-21-21	C. E. Teague.
111*	Forsyth.....	12.22	G	94,447.10	8-17-21	C. B. Hester—Heilig & Sherrill.
112	Caswell.....	11.93	G	147,065.71	11-2-21	J. M. Gregory and J. E. Lane & Co.
114*	Rowan.....	2.543	H S	83,587.02	3-17-21	R. M. Hudson & Co.
116*	Stanly-Montgom'		Bridge	199,614.80	1-9-22	Cornell-Young Co.
117	Wilson.....	6.25	G	41,828.93	3-21-22	County Commissioners—Lee J. Smith.
120	Bladen.....	23.67	G	105,688.55	4-18-22	J. A. Morrow—P. A. Ashby.
121*	Stokes.....	11.60	G	108,519.62	1-14-22	Jameson Bros.—Rogers & Shumway.
129	Richmond.....	17.28	G	77,507.48	12-28-21	Mulligan & Roach.
136*	Davie.....	6.99	G	61,733.04	12-4-21	Chandler & Ragland—Hagedorn Const. Co.

*Final Settlement Made with Federal Government

STATUS OF STATE WORK IN NORTH CAROLINA

Projects Under Construction

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	BEGUN	CONTRACTOR
100	Beaufort.....	10.50	H S	\$ 369,777.70	8-23-21	W. T. Hadlow.
106	Bertie.....	7.12	G	58,204.90	9-11-22	J. F. Mulligan Const. Co.—Boney & Hostetler.
113	Chowan.....	10.32	G	40,975.73	2-1-22	Nello L. Teer—P. R. Ashby.
114	Chowan.....	10.00	G	45,064.09	1-4-22	Battershill & Goode—Chandler & Ragland.
125	Edgecombe.....	15.11	H S	428,438.76	2-28-22	R. G. Lassiter & Co.
131	Gates.....	13.50	G	135,516.01	8-22-22	Bacon & Moore—W. D. Murray—Sadler Corp.
132	Gates.....	9.73	G	63,921.00	8-29-22	J. A. Marrow.
137	Halifax.....	5.67	H S	124,736.97	10-31-21	O. F. Leighton—A. C. House.
138A	Halifax-North-					
	ampton.....	12.59	G	131,712.13	5-1-22	Nello Teer—Richards Bros.
145	Hertford.....	12.88	G	86,379.70	7-31-22	Nello Teer—Atlantic Bridge Co.
151	Hyde.....	4.30	G	71,422.78	12-10-21	C. W. Lacy—Porter & Peck.
154	Martin.....	11.27	H S	394,090.74	4-17-22	Sou. Willite Paving Co.—O. F. Leighton, Inc.
155	Martin-Pitt.....	20.00	G	98,176.65	1-12-22	J. P. Dicus—P. R. Ashby.
159	Nash.....	11.22	G	89,942.43	1-22-22	J. A. Kreis & Co.
160	Franklin-Wake-					
	Nash.....	8.93	G	53,722.95	1-27-21	Chandler & Ragland—Southern Dray Co.
166	Northampton....	0.47	G	17,954.75	3-20-22	W. D. Murray—Sadler Corp.
167	Northampton....	20.48	G	87,294.90	7-17-22	Virginia Contr. Co.—Bacon & Moore.
173	Perquimans-Pas-					
	quotank.....	7.22	H S	239,444.70	8-29-22	Williams & Williams.

STATUS OF STATE WORK IN NORTH CAROLINA---Continued

Projects Under Construction (Continued)

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	BEGUN	CONTRACTOR
174	Pasquotank-Cam-	2.4	G	\$ 55,818.01	4-3-22	D. E. Williams.
175	Pasquotank.....	9.50	H S	217,405.72	4-6-21	County Commissioners.
183B	Pitt.....	14.35	Bridge	32,343.30	3-27-22	B. J. Boyles.
185	Pitt.....	9.75	G	31,069.72	3-28-22	J. A. Marrow.
186	Pitt.....	6.91	H S	260,816.60	9-20-21	Cheatwood & Driscoll.
191	Tyrell.....	15.18	G	57,934.41	1-20-22	C. W. Lacy—M. M. Jones.
195	Washington.....	14.93	G	65,619.35	2-27-22	L. M. Lee & Co.—B. J. Boyles.
196	Washington.....	13.68	G	82,099.60	5-15-22	W. H. Thompson—Nello Teer.
200	Carteret.....	8.34	G	79,629.00	7-21-22	Eagle Eng. Co.—Batson-Cooke Co.
210	Craven.....	9.93	H S	287,919.35	4-3-22	West Construction Co.—A. P. Gilbert.
211	Craven.....	16.06	H S	262,673.20	1-30-22	Union Paving Co.
218	Wayne-Duplin.....	15.60	G	80,804.50	8-4-21	C. W. Lacy.
219	Duplin-Lenoir.....	6.81	G	148,339.20	6-1-21	Chitwood & Palmer.
227	Greene.....	15.76	H S	238,113.70	12-19-21	West Construction Co.—Union Paving Co.
245	Jones.....	12.03	H S	244,737.90	3-22-22	Hyde & Baxter.
263	Pamlico.....	0.14	H S	289,324.02	3-27-22	Union Paving Co.
264	Craven-Pamlico.....	16.47	H S	27,156.25	7-24-22	Rhyne & Kitchen.
272	Sampson.....	10.01	G	98,807.39	6-19-22	R. E. Martin—Striblin—Staudy & Newell.
280	Wayne.....	7.63	H S	311,352.36	11-28-21	Union Paving Co.
281	Wayne.....	11.99	Bridge	22,484.88	10- -21	P. R. Ashby.
291	Wilson.....	13.17	H S	203,493.18	1-17-22	P. R. Ashby.
300	Bladen.....	9.77	G	65,189.90	4-8-22	T. W. Chandler—Nello Teer.
301	Bladen.....	3.44	G	82,028.21	11-21-21	J. F. Mulligan—Powell Paving & Const. Co.
312	Brunswick.....	15.82	H S	247,319.68	7-5-22	Alabama Conc. Prod. Co.—Batson-Cooke Co.
313	Brunswick.....	12.12	H S	105,389.85	3-15-22	Sou. Willite Paving Co.—Roanoke Bridge & Iron Works.
314	Brunswick.....	12.12	G	99,326.45	2-23-22	Hagedorn Const. Co.
316	Brunswick.....	11.22	G	80,068.72	8-14-22	B. Frank Price—Batson, Cooke Co.
325	Columbus.....	13.61	G	105,258.23	11-3-21	J. A. Kreis-Cornell-Young Co.
326	Columbus.....	5.2	G	195,838.19	5-23-22	J. T. Plott—J. A. Kreis & Co.
327	Columbus.....	.....	G	38,269.44	6-21-22	J. A. Kreis.
338	Cumberland-Samp-	.....	Bridge	26,233.99	10-28-21	Roanoke Bridge & Iron Works.
339	Harnett-Cumb'lnd	.....	Bridge	16,524.75	11-30-21	Porter & Boyd.
340	Cumberland.....	11.07	H S	381,032.02	6-15-22	Alabama Conc. Prod. Co.—Hobbs & Peabody.
364A	Onslow.....	9.95	G	44,631.40	3-14-22	R. E. Martin.
375	Pender.....	15.56	G	72,522.92	11-11-21	A. W. McClay.
376	Pender.....	7.64	G	94,757.85	11-11-21	C. G. Kershaw Const. Co.—Cornell Young Co.
377	Pender-Duplin.....	1.61	G	76,985.70	3-22-22	R. E. Martin-Hazell-Conerat-Quist Co.
378	Pender.....	14.12	H S	213,502.96	7-19-22	C. W. Lacy.
379	Pender.....	10.00	H S	100,000.00	5-22-22	State Forces.
388	Robeson.....	3.35	H S	137,000.40	11-10-21	C. W. Lacy—Roanoke Bridge & Iron Works.
389	Robeson-Colum.....	1.56	G	83,463.38	10-26-21	L. A. Chitwood.
400	Chatham.....	6.92	Bridge	57,420.22	4-14-22	R. M. Walker & Co.
402	Chatham.....	0.5	G	33,940.28	8-1-22	J. F. Mulligan Construction Co.
409	Durham.....	5.81	H S	6,140.64	1-13-22	J. P. Dicus.
411	Durham.....	12.82	H S	211,574.92	9-1-22	Hutton Eng. & Const. Co.
419	Franklin.....	1.56	G	63,021.97	7-27-22	Jamison Bros.—J. M. Gregory.
420	Franklin.....	5.12	H S	55,421.30	7-11-22	Chandler & Ragland.
427	Granville.....	4.19	H S	159,097.62	12-1-21	R. G. Lassiter & Co.
428	Granville.....	21.19	H S	132,637.77	7-14-22	Pittman Const. Co.
436	Harnett.....	5.91	G	144,318.14	6-28-21	C. G. Keeshaw Const. Co.—Hobbs & Kitchen.
445	Lee.....	5.90	G	18,692.85	5-20-22	C. B. Hester.
446	Lee.....	.....	H S	197,188.22	5-24-22	Atlantic Bitulithic Co.—O. A. Mann & Co.
453	Orange.....	9.00	Bridge	33,706.80	4-15-22	Geo. W. Kane.
456	Orange.....	11.24	G	37,459.07	1-7-22	Crawford & Crawford—Nello Teer.
463	Person.....	7.83	H S	327,171.35	8-14-22	Porter & Boyd.
473	Vance.....	7.20	H S	265,546.60	7-11-22	R. G. Lassiter & Co.
481	Wake.....	0.54	H S	252,925.15	1-24-22	Union Paving Co.—P. R. Ashby.
483	Wake.....	8.79	H S	19,989.75	5-15-22	C. D. Riggsbee.
484	Wake.....	4.49	H S	311,629.40	8-23-22	P. R. Ashby-Booz-Lloyd & Co.
492	Warren.....	3.88	H S	100,436.13	4-10-22	Porter & Peck—A. C. House.
493	Warren.....	6.21	H S	77,866.80	7-27-22	Porter & Peck.
494	Warren.....	13.10	G	208,130.01	9-6-22	Clifford Engineering Co.
501	Alamance.....	17.43	G	32,627.10	12-7-21	W. M. Shook—Hanford Bros.
502	Alamance.....	.....	G	138,629.97	7-17-22	W. E. Graham—Hanford Bros.
503	Alamance.....	10.24	Bridge	59,450.38	7-17-22	Atlantic Bridge Co.
525	Davidson.....	3.77	H S	363,141.68	12-23-21	Elliott & Sons & Boggs—Austin Bros. Bridge Co
526	Davidson.....	11.70	H S	130,826.19	3-4-22	Hagedorn Const. Co.—Heilig & Sherrill.
532	Guilford.....	10.50	H S	387,499.20	2-1-22	Elliott-Sholes Co.
533	Guilford-Forsyth.....	7.78	H S	427,997.62	7-11-21	Royer-Ferguson Const. Co.
535	Guilford.....	0.164	H S	259,357.01	9-21-22	Leaksville Lumber Co.
539	Guilford.....	10.45	H S	21,639.20	8-4-22	Robt. G. Lasiter P Co.
544	Hoke.....	7.14	G	32,445.49	5-16-22	O. A. Mann & Co.—J. T. Pigg.
566	Moore.....	2.96	G	61,380.66	3-6-22	Gibson Const. Co.—Nello Teer.
567	Moore.....	18.97	G	7,600.00	4-11-22	C. E. Teague.
569	Moore.....	13.37	G	97,141.45	8-1-22	Mayfield Const. Co.
577	Randolph.....	.....	H S	411,375.77	4-18-22	Royer-Ferguson Co., Inc.—J. L. Brinkley.

STATUS OF STATE WORK IN NORTH CAROLINA --- Continued

Projects Under Construction (Continued)

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	BEGUN	CONTRACTOR
588	Rockingham.....	7.98	H S	266,498.43	4-11-22	Cheatwood & Driscoll.
593 ^(FA 38)	Rockingham-Caswell.....	17.60	H S	\$ 525,393.22	7-11-22	J. A. Kreis.
600	Alexander.....	9.3	G	12,530.98	5-26-22	Bolton Construction Co.
601	Alexander.....	3.07	G	33,630.45	4-3-22	Gus Ginn, Inc.—R. M. Thurmond.
606	Stanley-Anson.....		Bridge	54,759.32	3-23-22	Concrete Steel Bridge Co.
607	Anson.....	6.39	G	40,517.29	3-21-22	Geer & Wilson—Booz-Lloyd & Co.
608	Anson.....	7.88	H S	345,408.58	9-18-22	Lampton & Burks—J. A. Peterson.
614 ^(FA 144)	Cabarrus.....	9.20	H S	350,085.07	6-20-22	A. L. Harris—Oliver & Costello Bros.
622	Catawba.....	10.85	H S	354,684.88	1-23-22	Union Paving Co.
629	Catawba.....	8.40	H S	268,662.48	6-5-22	A. L. Harris—R. M. Thurmond & Co.
630	Gaston.....	3.02	H S	98,392.36	10-21-21	W. F. McCanless.
632	Gaston.....	9.5	H S	291,868.94	1-2-22	Davis-Wileox Const. Co.
638	Iredell.....	7.88	H S	244,509.30	10-12-21	Thompson-Caldwell Co.
639	Iredell.....	10.59	H S	387,448.42	1-2-22	R. M. Hudson Co.—Luten Bridge Co.
640	Iredell.....	8.17	H S	181,990.82	9-26-22	W. E. Graham.
647	Lincoln.....	7.10	H S	250,108.15	6-5-22	A. L. Harris —R. M. Thurmond & Co.
653	Mecklenburg.....	8.84	H S	308,182.44	1-16-22	Union Paving Co.—Luten Bridge Co.
654	Mecklenburg.....	1.01	H S	302,887.09	4-3-22	Lampton & Burks.
655	Mecklenburg.....	1.57	H S	62,028.68	12-21-21	Speed-Parker Co., Inc.—Luten Bridge Co.
657	Mecklenburg.....	1.38	G*	20,000.00	12-8-21	State Forces.
661	Richmond.....	9.76	G	40,683.41	7-18-22	McDonald & Brooks.
665	Richmond.....	5.77	H S	194,501.23	7-28-22	A. J. Wardrep.
670	Cabarrus-Rowan.....	4.53	H S	142,221.53	6-29-22	Southern Construction Company.
673	Davidson-Rowan.....	0.59	Bridge	285,565.20	9-19-22	Hardaway Contracting Co.—Elliott & Sons.
677	Scotland-Robeson.....	7.11	H S	283,460.21	4-26-22	P. R. Ashby—Chitwood & Palmer.
695	Union.....	4.5	H S	123,865.28	1-23-22	Redman Const. Co.
700	Alleghany.....	7.90	G	132,297.33	6-23-21	W. E. Graham.
701	Alleghany-Wilkes.....	8.00	G*	153,863.60	6-16-21	W. E. Graham.
711	Ashe.....	9.5	G	60,000.00	9-7-22	Little Contracting Co.
724	Caldwell.....	4.66	G	51,890.66	5-8-22	County Road Comms—R. M. Thurmond & Co.
725	Caldwell.....	2.4	G	10,000.00	12-29-21	County Commissioners.
731	Davie.....	5.46	H S	195,393.11	3-13-22	G. R. Martin-Heilig & Sherrill.
741	Forsyth.....	8.90	H S	315,025.81	7-27-22	Hardaway Construction Company.
742 ^(FA 137)	Forsyth.....	10.62	H S	385,127.60	6-20-22	Harris Construction Co.
750	Stokes.....	14.86	G	93,054.38	9-15-21	J. F. Mulligan Const. Co.—Lee J. Smith.
760	Surry-Wilkes.....	6.91	G	24,387.66	2-10-22	W. E. Graham.
764	Surry.....	1.63	H S	50,588.20	8-30-22	Leaksville Lumber Co.
771A	Watauga.....	0.5	H S	40,000.00	9-7-22	State Forces.
771B	Watauga.....	3.5	G	75,000.00	9-7-22	State Forces.
780	Wilkes.....	18.00	G*	25,000.00	7-25-21	J. F. Mulligan.
781	Wilkes.....	14.50	G*	30,000.00	7-25-21	J. F. Mulligan.
782	Wilkes.....	5.97	H S	184,614.65	3-29-22	Hyde & Baxter.
783	Wilkes-Watauga.....	34.40	G*	80,009.00	9-2-21	Chandler & Ragland.
784	Wilkes.....	4.97	G	85,966.21	8-30-22	J. F. Mulligan Constr. Co.—Foster Constr. Co.
790	Yadkin.....	10.12	H S	308,123.42	4-24-22	Pittman Construction Co.
800	Avery.....	5.84	H S	198,827.02	7-24-22	O'Brien Const. Co.—J. A. Kreis.
801	Avery.....	0.99	H S	22,350.24	3-24-22	Geer & Wilson.
811	Burke.....	6.0	H S	189,412.41	1-13-22	Southern Dray Co.
814	Burke.....	8.69	G	13,459.60	8-15-22	M. A. Kollock.
822	Cleveland.....	10.47	H S	404,378.48	9-27-22	Elliott & Sons—J. A. Kreis.
823	Cleveland.....	2.0	H S	81,234.01	1-22-22	Southern Paving Co.—Z. B. Weathers & Son.
833	Henderson.....	10.22	G	38,412.44	1-3-22	S. L. Davis Const. Co.—Asheville Const. Co.
845	McDowell.....	7.19	G	132,177.93	9-6-21	J. W. Stapp Const. Co.—Praytor, Howton Wood Const. Co.
846	McDowell.....	10.06	G	204,680.74	9-12-21	Asheville Const. Co.—W. T. Taylor Const. Co.
855	Mitchell.....	4.97	H S	174,398.78	9-12-21	Fiske-Carter Construction Co.
856	Mitchell.....	4.0	H S	239,005.80	3-20-22	Porter & Boyd—L. J. Chandler & Co.
860	Mitchell.....	5.58	H S	152,908.42	4-21-22	J. F. Mulligan—W. H. Anderson Const. Co.
866	Polk.....	5.96	H S	180,393.40	4-3-22	Dunn & Woodall—Henry Const. Co.
879	Rutherford.....		Bridge	5,737.38	1-9-22	Austin Bros. Bridge Co.
880	Rutherford.....		Bridge	24,679.43	4-4-22	Austin Bros. Bridge Co.
882	Rutherford.....	15.80	G	89,010.46	9-20-22	Fiske Carter Const. Co.—J. H. Starns.
888	Yancey.....	15.22	H S	230,499.94	10-10-22	The Luck Co.
903	Buncombe.....	2.58	H S	100,399.47	4-10-22	Asheville Paving Co.—R. C. Stevens.
904	Buncombe.....	1.60	H S	81,079.35	3-13-22	Asheville Paving Co.—F. C. Stevens.
910	Cherokee.....	7.56	G	76,743.59	5-24-21	Ross Bros.—W. T. Moore Conc. Prod. Co.
911	Cherokee.....	10.33	G	84,475.38	10-25-21	H. A. Wells—Southern Dray Co.
913	Cherokee.....	10.33	H S	95,554.80	8-8-22	Mills, Williams Construction Company.
920	Clay.....	4.8	G	54,875.81	1-9-22	E. A. Wilson & Co.—W. T. Moore Conc. Prod. Co.
921	Clay.....	12.37	G	123,929.52	10-24-21	Lee J. Smith Const. Co.—W. T. Moore Conc. Prod. Co.
930	Graham.....	12.90	G	130,522.00	10-15-21	Lee J. Smith Const. Co.—C. M. Dicus.
940	Haywood.....	7.13	H S	126,082.00	4-14-22	Alexander & Patton—H. A. Brown & Co.
950	Jackson.....	7.56	G	145,313.30	6-13-21	Wright & Nave—O'Brien Const. Co.
951	Jackson.....	11.85	H S	249,546.00	8-17-22	R. H. Wright & Sons—W. T. Moore Conc. Prod. Co.
952A	Jackson.....	10.22	G	164,126.60	8-17-22	Brooks-Calloway Company.
954	Jackson.....	1.68	H S	90,871.77	7-1-22	Mills, Williams Construction Company.

*Reconstruction only.

STATUS OF STATE WORK IN NORTH CAROLINA---Continued

Projects Under Construction (Continued.)

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	BEGUN	CONTRACTOR
960	Macon.....	4.97	G	\$ 69,100.57	6-6-21	J. T. Plott—J. E. Lane & Co.
961	Macon.....	4.77	G	58,340.59	12-5-21	J. T. Plott—J. E. Lane & Co.
962	Macon.....	13.58	G	171,310.04	4-24-22	O'Brien Const. Co.—Griffin Const. Co.
970	Madison-Yancey..	13.80	G	267,378.26	11-11-21	R. H. Wright & Sons—O'Brien Const. Co.
980	Macon-Swain.....	17.84	H S	350,175.11	.....	Costello Bros.—Condon & Condon.
990	Transylvania.....	8.87	H S	151,238.89	6-5-22	Sam L. Davis Const. Co.—R. C. Stevens.

*Reconstruction only.

Projects Completed

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	COMPLETED	CONTRACTOR
139	Halifax.....	.....	Bridge	\$ 18,436.66	8-25-22	Chandler & Ragland—Porter & Peck.
140	Halifax.....	.....	Bridge	10,542.60	5-5-22	Von Glahn & Talbott.
209	Craven.....	2.65	H S	15,688.21	2-15-22	Eagle Engineering Co.
255	Lenoir.....	0.82	H S	33,957.00	8-18-22	West Construction Co.
410	Durham.....	2.3	H S	83,921.97	2-13-22	C. D. Riggsbee.
454	Orange.....	4.29	H S	192,006.15	3-16-22	Elliott, Sholes & Teer.
455	Orange.....	4.19	G	46,415.77	11-28-21	J. F. Mulligan Const. Co.—P. R. Ashby.
482	Wake.....	6.64	H S	191,669.21	12-8-21	R. M. Hudson Company.
500	Alamance.....	5.22	G	32,732.20	1-17-22	W. W. Tuck & Son—A. M. Hazell, Connerate—Quist Construction Co.
505	Alamance.....	0.42	H S	15,346.40	6-23-22	Hedrick Construction Co.
511	Caswell.....	14.8	G	74,192.58	12-12-21	White & Simpson—C. B. Hester.
692	Union.....	2.28	H S	65,366.67	12-28-21	Redmon Construction Co.
710	Ashe.....	3.14	H S	142,687.93	8-17-22	Pittman Construction Co.
719	Caldwell.....	.....	Bridge	5,343.25	6-26-22	Cottrell & Howard.
722	Caldwell.....	7.00	G*	12,000.00	1-18-22	County Forces.
751	Stokes.....	7.25	G	31,746.00	10-4-21	W. E. Graham.
844	McDowell.....	1.80	H S	57,048.42	12-28-21	Bolton Construction Co.
855B	Mitchell.....	.....	Bridge	7,454.15	8-22-22	Luten Bridge Co.
877	Rutherford.....	9.79	G	65,563.73	8-7-22	Geer & Wilson.
878	Rutherford.....	6.55	G	50,913.50	9-22-21	Michaux Const. Co.—Geer & Wilson.
942	Haywood.....	0.57	G	5,294.46	2-1-22	O'Brien Construction Co.

*Reconstruction only.

PROJECTS UNDER CONTRACT

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	CONTRACTOR
157A	Martin.....	12.41	G	\$90,763.86	Jamison Bros.—J. A. Marrow.
157B	Martin.....	12.36	G	90,396.24	J. F. Mulligan Construction Co.—Batson, Cooke Co.
183A	Pitt.....	13.54	H S	399,854.40	S. J. Groves & Sons.
184	Pitt.....	7.14	H S	206,516.42	Public Service Production Co.
236(F A 143)	Johnson.....	14.83	H S	475,321.55	R. G. Lassiter & Co.
317	Brunswick.....	.....	Bridge	18,893.82	Atlantic Bridge Co.
328	Columbus.....	7.03	H S	219,371.68	L. L. Tindall.
342	Cumberland.....	5.91	H S	177,402.50	A. J. Wardrep.
351	New Hanover.....	10.64	H S	200,006.40	Southern Willite Paving Co.
364B	Onslow.....	12.84	G	99,819.00	A. W. McClay.
380	Pender.....	8.98	H S	162,212.60	C. W. Lacy.
386-87	F A-141-2 Robeson	9.86	H S	647,888.05	James O. Heyworth.
412	Durham.....	8.80	H S	252,582.33	L. L. Tindall.
460	Orange.....	9.87	H S	296,835.55	R. M. Hudson & Co.
504	Alamance.....	5.22	H S	154,127.16	Elliott & Sholes.
528	Davidson.....	10.24	H S	427,511.92	Hagedorn Construction Co.—J. A. Peterson.
538	Guilford.....	.....	Bridge	7,039.01	J. L. Brinkley.
545	Hoke.....	10.45	G	58,195.06	O. A. Mann & Co.—A. W. McClay.
589	Rockingham.....	9.81	H S	324,975.31	Cheatwood & Driscoll.
590	Rockingham.....	2.10	H S	66,092.18	Geo. R. Martin.
602	Alexander.....	9.28	H S	189,329.80	W. E. Graham.
615	Cabarrus.....	3.88	H S	98,741.17	Thompson-Caldwell Co.
658	Mecklenburg.....	9.55	H S	270,704.92	Union Paving Co.
665	Richmond.....	5.77	H S	194,501.23	A. J. Wardrep.
693	Union.....	1.0	G	3,324.48	Sykes-Collins Company.
694	Union.....	.....	Bridge	23,549.13	Hagedorn Construction Co.
702A	Alleghany.....	7.75	H S	185,483.76	O'Brien Construction Co.—Luten Bridge Co.
712	Ashe.....	11.06	G	197,687.38	J. T. Plott.
761	Surry.....	2.22	H S	77,334.02	Geo. R. Martin.
765	Surry.....	3.40	H S	112,685.76	Campbell Contracting Co.
785	Wilkes.....	2.52	S	78,703.50	D. J. Brookshire & Co.
821	Cleveland.....	1.50	H S	60,192.33	Davis-Wilcox Construction Co.
847	McDowell.....	3.84	G	93,443.90	C. W. Lacy—Oliver & Costello Bros.
848	McDowell.....	.....	Bridge	18,597.04	R. M. Thurmond & Co.
858	Mitchell.....	.....	Bridge	42,367.49	R. M. Thurmond & Co.
876	Rutherford.....	4.83	H S	146,264.80	Fiske-Carter Construction Co.
953	Jackson.....	12.72	.....	118,186.75	C. C. McCabe.
963	Macon.....	8.68	G	121,355.63	Costello Bros.—Brooks Calloway Co.

Summary

	NUMBER OF PROJECTS			MILEAGE		APPROXIMATE TOTAL COST		
	H S	G	BRIDGE	H S	G	H S	G	BRIDGE
UNDER CONSTRUCTION								
Federal Aid Projects.....	2	6	.....	9.24	48.14	\$ 195,816.88	\$ 820,921.47	.....
State Projects.....	86	78	11	653.257	816.78	18,990,730.22	6,178,685.47	\$618,905.65
Total Under Construction	88	84	11	662.492	865.594	\$19,186,547.10	\$6,999,606.94	\$618,905.65
UNDER CONTRACT								
Construction not yet begun								
Federal Aid Projects.....	24	9	5	184.11	85.36	\$5,424,639.16	\$873,172.30	\$110,446.49
State Projects.....	24	9	5	184.11	85.36	\$5,424,639.16	\$873,172.30	\$110,446.49
Total Under Contract.....	24	9	5	184.11	85.36	\$5,424,639.16	\$873,172.30	\$110,446.49
COMPLETED								
Federal Aid Projects.....	29	75	4	142.47	713.5	\$4,745,739.45	\$6,576,638.91	\$641,946.53
State Projects.....	9	8	4	24.34	55.37	797,691.96	318,858.24	41,776.66
Total Completed.....	38	83	8	166.810	768.87	\$5,543,431.41	\$6,895,497.15	\$683,723.19

Total mileage of Hard Surface work under construction or contracted for..... 846.60
 Total mileage of Topsoil, Sand Clay or Gravel work under construction or contracted for..... 950.96

Total mileage under construction or contracted for..... 1,797.56

Total cost of Hard Surface work under construction or contracted for..... \$24,611,186.26
 Total cost of Topsoil, Sand Clay or Gravel work under construction or contracted for..... 7,872,779.24
 Total cost of Bridge work under construction or contracted for..... 729,352.14

Total cost of work under construction or contracted for..... \$33,213,317.64

Total mileage of Hard Surface work completed..... 166.81
 Total mileage of Topsoil, Sand Clay or Gravel work completed..... 768.87

Total mileage of work completed..... 935.68

Total cost of Hard Surface work completed..... \$5,543,431.41
 Total cost of Topsoil, Sand Clay or Gravel work completed..... 6,895,497.15
 Total cost of Bridge work completed..... 683,723.19

Total cost of all work completed..... \$13,122,651.75

Corrected to October 1, 1922.

Notice to Advertisers:

All contracts for advertising now in force will be extended to take care of the combination of the September and October issues

THE EDITOR

SLAUGHTER CULVERT COMPANY

300 - 301 MASONIC TEMPLE

RALEIGH



Metal Culvert

Concrete Culvert

Washed and Screened Sand Gravel Crushed Stone

Conforming to the specifications of the North Carolina
State Highway Commission.

Prompt shipments by rail or water

Favorable freight rates to all North Carolina points.

Quotations gladly furnished on request.

THE ARUNDEL CORPORATION

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Baltimore, Maryland

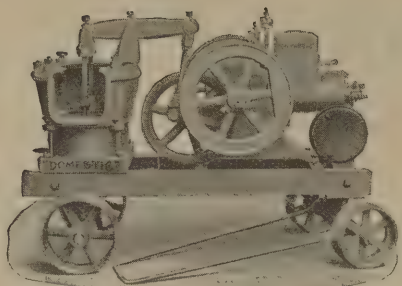
BRANCH OFFICE:
519 Board of Trade Bldg.
Norfolk, Virginia

DEPENDABLE

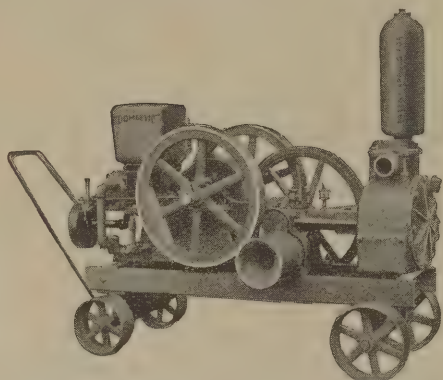
"DOMESTIC"

POWER UNITS

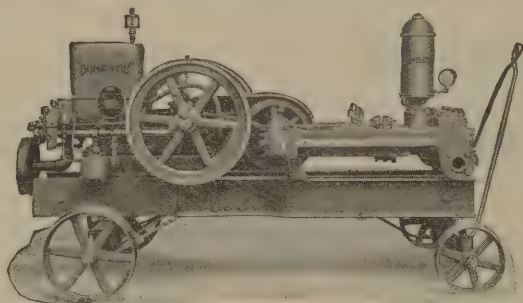
Reg. U. S. Pat. Off.



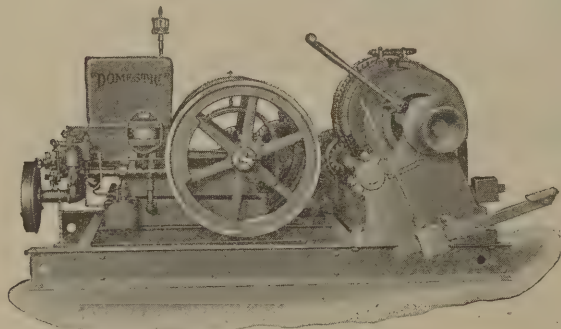
TRENCH PUMPS—For Draining
Excavations



FORCE TRENCH PUMPS—With Winch
Head—For Draining Excavations and
General Contractors Use



HIGH PRESSURE FORCE PUMPS—For Supply-
ing Water Long Distances to Boilers, Con-
crete Mixers, Drilling Machines, etc.



GASOLINE HOISTS—Single and Double Drum,
for Raising Materials, Operating Pile
Hammers, etc.

Tools *for* Contractors

"Domestic" Units are built to "stand-up" under the severe and constant duty required by the Contractor.

The quality of these machines is unsurpassed—thousands of users will vouch for their dependability.

The illustrations here show a part of our line of "Quality" Tools for the Contractor.

"Domestic" Units are sold by dealers in all parts of the United States and Canada.

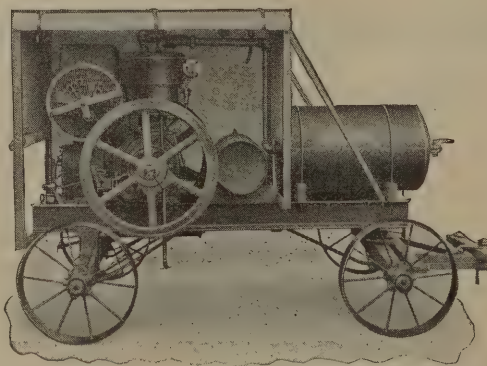
Write for list of North Carolina contractors using "Dependable Domestic" pumping outfits.

E. F. CRAVEN

"The Road Machinery Man"

GREENSBORO, N. C.

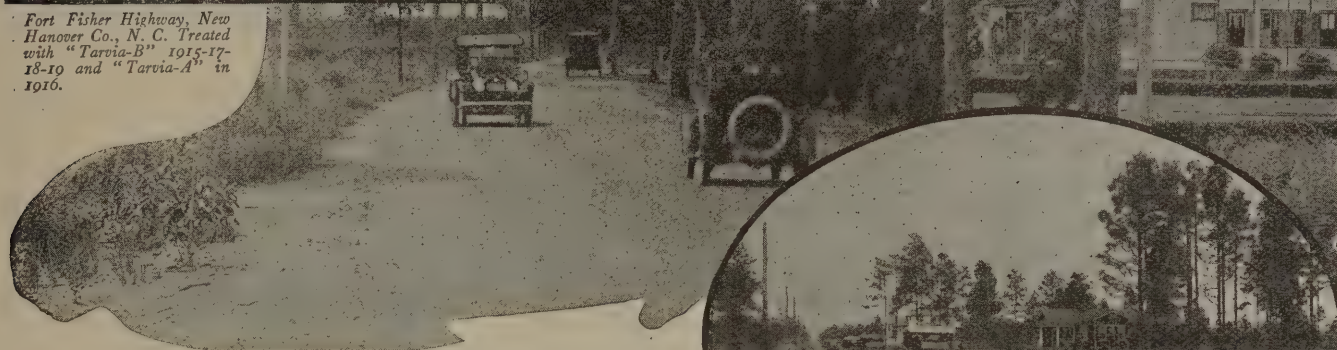
STATE DISTRIBUTOR



PORTABLE AIR COMPRESSORS—For Drilling
Rock, Riveting, Tamping or Any Purpose
Where Compressed Air is Needed



Fort Fisher Highway, New Hanover Co., N. C. Treated with "Tarvia-B" 1915-17-18-19 and "Tarvia-A" in 1916.



Above is Wrightsville Turnpike, New Hanover Co., N. C. Treated with "Tarvia - A" 1915, and with "Tarvia-B" 1917.



Another view Fort Fisher Highway.

"The Best Investment The Board Ever Made"

Mr. Addison Hewlett, Chairman of the Board of Commissioners of New Hanover County, N. C., writes, under date of July 25, 1921:

"We have been using Tarvia for surface treating the macadam roads of New Hanover County for the past six years, and we find this treatment satisfactory in every respect.

"Before we started the use of Tarvia we had great difficulty in maintaining our roads, as they became very dusty in dry weather and washed away in wet weather, leaving our road surface full of holes and ruts. Since using Tarvia the surface of the roads has been well protected in all kinds of weather, and today our roads have smooth, hard surfaces and our maintenance problem has been very easily solved. The Tarvia treatment is very inexpensive.

"It is unquestionably the best investment the Board of Commissioners has ever made and the Commissioners would not consider for a moment discontinuing Tarvia on our roads."

Tarvia

For Road Construction
Repair and Maintenance

Additional comments on Tarvia are made by R. A. Burnett, County Superintendent of Roads:

"Tarvia treatments are given to some of our roads every year while other roads, such as the Wrightsville Turnpike, have lasted as long as three years before requiring another treatment.

"These treatments have cost us in the neighborhood of \$300 per mile per year and have proved to be the best, easiest and cheapest method of maintaining our roads. We have always had the best of co-operation from your engineers . . .

"We feel that we have a finer system of roads than any other county in the State."

No matter what your road problems may be—new construction, maintenance, or repairs—there is a grade of Tarvia made especially for the purpose.

Write for free illustrated booklet describing the various uses of Tarvia

36th and Grey's
Ferry Avenue

The *Barrett* Company

Branches in All
Leading Cities



PHILADELPHIA, PA.



**Permanent
Construction**

Concrete

**Minimum
Maintenance**

Solves the Road Problem

The concrete road is gaining in favor in all parts of the United States. Whether laid in North or South, East or West, in all varieties of climate and under widely varying conditions, the concrete road is meeting with success and is solving the problem of securing a roadway at reasonable cost that will stand up under modern traffic conditions.

Public approval and appreciation of the concrete road is based upon practical observation as to its extreme utility, reasonable first cost and the almost negligible outlay required for maintenance.

The most important question in road building today is that of maintenance. The one aim and desire of road officials and engineers has been to find a material, the use of which would keep maintenance charges at a minimum.

In Bellefontaine, Ohio, the maintenance cost of a concrete road put down 20 years ago has averaged only one-fourth of a cent per square yard per year.

In Wayne County, Michigan, the maintenance on 60 miles of concrete road laid 1909 to 1912 was less than one-sixth of a cent per square yard for three years.

Concrete, therefore, completely answers the maintenance question.

And this combined with reasonable first cost makes it the ideal material for a modern road to meet modern conditions.

CLINCHFIELD PORTLAND CEMENT CORP.

Office and Mills: KINGSFORT, TENN.

CRUSHED STONE

for

CONCRETE PAVEMENT

for

TOPEKA OR WARRENITE SURFACING

for

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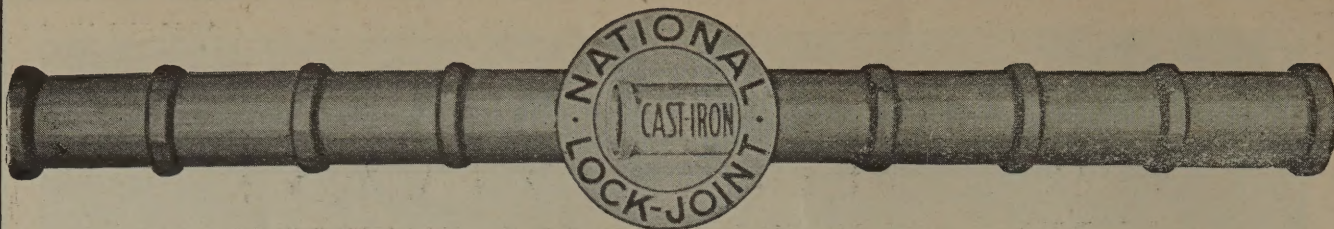
CONSTRUCTION WORK *of any* KIND

For Delivered Prices in Any Quantity

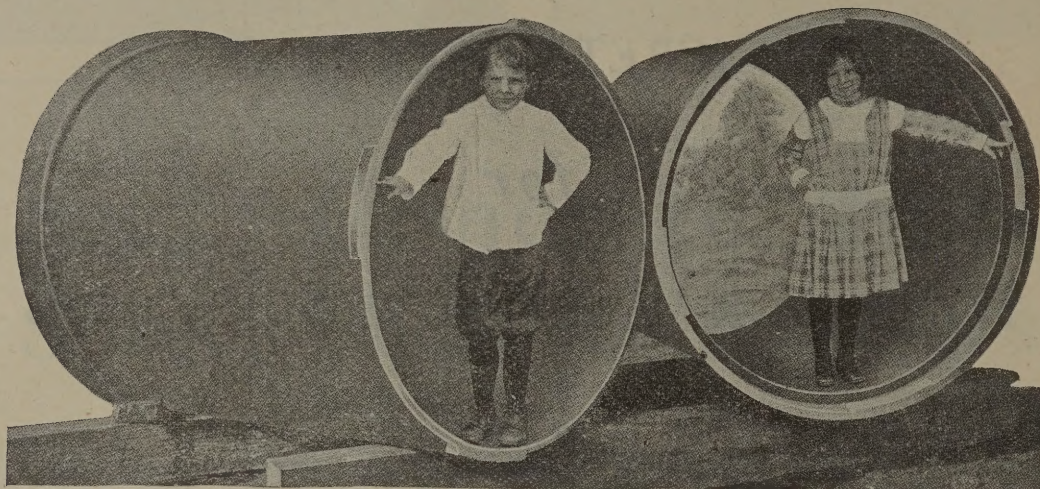
Wire, Write or Phone

ORINOCO SUPPLY CO.

WINSTON-SALEM, N. C.



Long Years *of* Life Ahead *of* Them



National Lock-Joint Cast-Iron Pipe

The Pipe *of* Short Units, Long Service *and* Low Costs

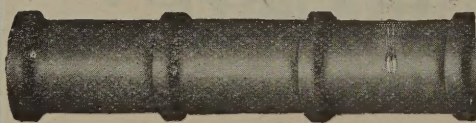
*The Pipe that locks effectively, that prevents Separation
and assures alignment to perfection.*

The pipe which solves culvert renewal problems with least expense, greatest efficiency. The pipe that does not rot or disintegrate, the pipe that is mechanically correct and has proved itself the solution of the culvert problem.

CONTRACTORS *and* ENGINEERS, GET THIS:

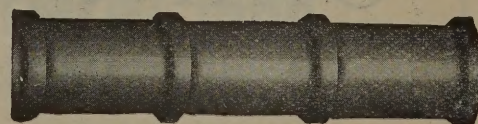
TWO MEN, without the use of any tools whatsoever, will unload, handle and install all sizes up to and including 36 inches in diameter.

It is as cheap to handle and install as clay pipe WITH NO BREAKAGE LOSS. In shallow trench work the entire culvert can be built up, interlocked and rolled into place in one operation.



AMERICAN
CASTING CO.

Birmingham, - - Alabama



GEO. E. HOPPE, PRES.

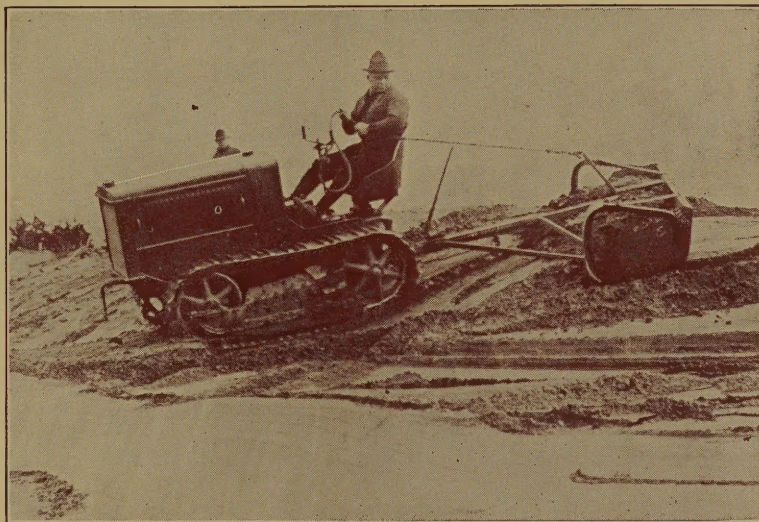
GRAHAM B. BRIGHT, V.-P. & SALES MGR.

TRACTOR & MACHINERY SALES CO.

DISTRIBUTORS

RICHMOND, VIRGINIA

Offering *the* latest addition to the "CATERPILLAR" family



In the "CATERPILLAR" T-35 HOLT brings to industry and road building a small compact tractor embodying the same dependable qualities found in the larger "CATERPILLARS."

The T-35 fits in with the road making and road maintenance programmes of every city, town, county, and township.

As a utility machine for contractors it is unsurpassed. It is sold at a price that puts it in a class by itself.

The larger "CATERPILLARS" are still "on the job" and every day further justify the claim of the manufacturer that they are "The Nation's Road Maker."

Write for copy of catalogue describing the T-35 or a copy of our booklet "CATERPILLAR PERFORMANCE."

We also handle a full line of machinery for building or maintaining a street or road.

TRACTOR & MACHINERY SALES COMPANY
DISTRIBUTORS

THE HOLT MANUFACTURING CO.

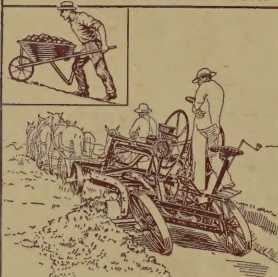
There is but one **"CATERPILLAR"** *HOLT builds it*



ONE OF THE NORTH CAROLINA STATE HIGHWAY DEPARTMENT'S No. 12 ROAD KING CUTTING DOWN A ROUGH DITCH BANK

in North Carolina

HE LEANS TOWARD THE LOAD



SO DOES THE ADAMS
ADJUSTABLE LEANING WHEEL GRADER

ADAMS GRADERS are built in 6½ ft. to 12 ft. blade lengths. There is a size to suit your needs and power exactly.

ADAMS Graders have proved their superiority and their ability to build the most miles of Good Roads per dollar or per day. There's only one reason—the Adjustable Leaning wheels are an exclusive feature on Adams Graders by means of which the weight of Adams Graders is leaned toward and balanced against the load. This overcomes side-draft and skidding, increases capacity and lessens the draft. This feature also enables Adams Graders to do difficult ditch and bank work, not successfully accomplished with other graders.

Every Adams Grader is guaranteed to prove these claims. Write today for catalog and let us show you how Adams Graders will reduce your grading costs.

Write Our Local Distributor

J. C. BENJAMIN

733 WEST HARGETT STREET

RALEIGH, NORTH CAROLINA

J. D. ADAMS & COMPANY

HOME OFFICE AND FACTORY:

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ADAMS ADJUSTABLE LEANING WHEEL GRADERS